

### **CLAIM AMENDMENTS**

This listing of claims will replace all prior versions and listings of claims in the application:

#### **Listing of Claims:**

1. (Currently Amended) A method for radiolabeling precursor chemical compounds comprising the steps of:
  - ~~injecting a sample comprising~~ reacting a precursor chemical compound and a radiolabeling reagent, into in an injection loop of a high performance liquid chromatograph (HPLC) without additional solid supports, to provide a reaction mixture comprising a radiolabeled compound;
  - ~~—injecting a radiolabeling reagent into the injection loop;~~
  - ~~—allowing the radiolabeling reagent to react with the precursor chemical compound, to provide a reaction mixture comprising a radiolabeled compound;~~
  - injecting the reaction mixture into the HPLC column; and
  - isolating the radiolabeled compound.
2. (Original) The method according to claim 1, wherein the radiolabeling reagent is a volatile and condensable compound.
3. (Original) The method according to claim 2, wherein the radiolabeling reagent is selected from the group consisting of [<sup>11</sup>C]-ethyl iodide, [<sup>11</sup>C]-propyl iodide, [<sup>11</sup>C]-methyl iodide and [<sup>11</sup>C]-acetyl iodide.
4. (Original) The method according to claim 3, wherein the radiolabeling reagent is [<sup>11</sup>C]-methyl iodide.

5. (Original) The method according to claim 1, wherein the precursor chemical compound is in the form of an acid salt and the sample further comprises a base.
6. (Original) The method according to claim 4, wherein the [ $^{11}\text{C}$ ]-iodomethane is reacted with the precursor chemical compound for about 0.5 to about 20 minutes.
7. (Original) The method according to a claim 1, wherein the precursor chemical compound is dissolved in a solvent.
8. (Original) The method according to claim 1, wherein the sample further comprises a catalyst.
9. (Canceled) A radiolabeled compound prepared using a method according to claim 1.
10. (Canceled) A [ $^{11}\text{C}$ ]-methylated compound prepared using a method according to claim 4.
11. (New) A method for radiolabeling precursor chemical compounds consisting essentially of:
  - injecting a sample comprising a precursor chemical compound, into an injection loop of a high performance liquid chromatograph (HPLC) without additional solid supports;
  - injecting a radiolabeling reagent into the injection loop;
  - allowing the radiolabeling reagent to react with the precursor chemical compound, to provide a reaction mixture comprising a radiolabeled compound;
  - injecting the reaction mixture into the HPLC column; and
  - isolating the radiolabeled compound.